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lected, the color may be retained for years afterward. The cotton lined nests in the south, I am told, are very beautiful, being smooth and pure white inside.

One of the principal objects I have in publishing this article is to give added support to the fact that in the matter of their nest building many species of North American birds have gradually, but nevertheless markedly, during the past century, changed their habits in not a few particulars.

Sometimes the reasons for this are sufficiently clear, as in the case of the Chimney Swifts and others, but then, on the other hand, they are by no means always so obvious, though such cases are not of such frequent occurrence.

BIRDS OF KIRKWOOD, DEKALB COUNTY, GEORGIA.

BY ROBERT WINDSOR SMITH.

DESCRIPTION OF SECTION.

An estimated square mile in DeKalb county, Georgia, the northern boundary lying along the line of the Georgia railroad; the center of the specified tract being about four and one-half miles in an easterly direction from Atlanta, Georgia; situated on the dividing ridge between the waters of the Atlantic Ocean, and the Gulf of Mexico, at an elevation of 1050 feet above the level of the sea; latitude $35^{\circ} 45'$ north, longitude $84^{\circ} 45' 29''$ west from Greenwich.

The water which falls on the northern side of the Georgia railroad flows into the Chattahoochee river, and thence into the Gulf of Mexico; that which falls on the south side flows into the South river, thence to the Ocmulgee, which empties into the Atlantic Ocean. About three-fourths of the tract comprises virgin forest, swamp, old burned-out fields, waste and neglected places. These waste and neg-

lected places have in many instances grown up in low pines, and briars, making, in some spots, almost impenetrable thickets. The remaining fourth includes the village of Kirkwood, a little place containing about four hundred people. Kirkwood is built upon what was once a farm, a beautiful place of one hundred and fifty acres. About ten years ago the land was purchased by a syndicate, which, after projecting a trolley line through it from Atlanta to Decatur, a distance of six miles, divided it into lots and sold the greater portion of it to persons, the most of whom were doing business in Atlanta. Upon this place is a passing remnant of a Cherokee rose hedge, that once grew the entire length of one side of the farm, whose white mantle of flowers added grandeur to the already beautiful landscape.

Here and there over the land where homes have not been built, a few scattered clumps of this old hedge can still be seen. The pits or seeds ripen late in the fall, and make a plentiful supply of food for the song sparrow, while the hedge itself lends a ready shelter against storm and danger.

There are no high elevations, or deep ravines in the tract, but the general "lay" of the land would be called hilly and rolling. The forest trees include oak, pine, hickory, yellow poplar, chestnut, blackgum, elm, ash, wild cherry, sassafras, water-oak, beech, swamp or red maple, and red-bud, crab-apple, sourwood, and holly are found, but not very plentifully. The blossoms of the crab-apple and sourwood are much sought after by bees, from which they gather a fine article of honey; the first blossoms early in the spring, the last late in the fall. In the swamps and on the edges of ditches grow a tangle of wild grapes, alder, elder, sumach, and bamboo; the whole being enlivened by the many tints of the flowers of the wild azalea. The soil is a sandy loam upon a stiff subsoil. There are no farms immediately within the tract, though there are plenty of persons in DeKalb county who make farming a business, cotton and corn being not only the principal, but the most profitable production. Wheat, rye, oats, and barley are cultivated to a limited ex-

tent. The sweet potato makes an "all 'round" crop, the man with only a small garden "patch" managing to produce a few for his own consumption. Peaches, pears, plums, apples, cherries, figs, and grapes do well in any part of the county. Strawberries and raspberries are easily raised, while blackberries grow wild in every old, neglected field. There is also a variety found in the swamps which attains to a larger size.

Gray squirrels, ground squirrels, skunks, opossums, minks, and muskrats are the indigenous wild animals. The opossums and skunks are fairly common, the others rare and seldom seen. Bull-frogs are plentiful; some large ones are caught in East Lake, while toads and tree-frogs are common, the latter oftener heard than seen. The snakes are water-moccasin, black, king, and chicken snakes, and some smaller species, the names of which I do not know. A box terrapin is occasionally seen, river tortoise are found in low, marshy places, both on the land and in the water, they sometimes become troublesome by destroying young ducks and goslings which happen to be swimming in the streams.

There are four species of lizards: one a kind of chameleon, which has a faculty of changing its color, it is sometimes green and sometimes brown; a scaly, rough-looking one, which lurks about old fences and the lower part of the trunks of trees; two others which are strictly terrestrial—one a trim little fellow with brown and yellow stripes upon a blue ground, the other a much larger one with a dark brown body with dirty stripes, the head being a reddish brown. The two last are swift runners, and are difficult to capture. They are both accused of being fond of ripe strawberries, but the damage which they do is, no doubt, overbalanced by the amount of insects which they destroy. The water used for domestic purposes is free-stone, and is obtained from wells at an average depth of forty feet. There are no navigable watercourses in the tract, nor in the county. East Lake, which is only an artificial lake or pond, lies about one-half mile outside the eastern limit, and covers

about thirty acres. There is a little pond within the western boundary which is commonly known as the "Chemical Pond." It is used as a pumping station by the Georgia Chemical Works, and embraces, probably, a space of one-half acre.

There are innumerable little streams, or branches as they are called in the South, traversing the tract, but with the exception of a few small minnows, no fish are found in them. These little fish are sometimes caught by boys and sold to parties who come out from Atlanta to fish in the lake.

BIRDS OF DEKALB COUNTY, GEORGIA.

Comprising the species observed during my stay in the county, embracing a period of little more than ten years.

1. *Podilymbus podiceps*. Pied-billed Grebe.—Casual. A few have been seen in East Lake. Not known to breed.
2. *Gavia imber*. Loon.—Accidental. One was taken in East Lake by an Atlanta sportsman, in November, 1896.
3. *Lophodytes cucullatus*. Hooded Merganser.—Accidental. One taken in East Lake by a Mr. Myer, of Atlanta, November 15, 1896.
4. *Anas boschas*. Mallard.—Casual. Sometimes seen in East Lake.
5. *Dafila acuta*. Pintail.—Accidental. One shot in East Lake by Mr. Simmons, of Kirkwood, in the winter of 1899.
6. *Botaurus lentiginosus*. American Bittern.—Accidental. Mr. Harry Pedleton showed me the skin of one of these birds, a short time after I moved to Kirkwood, which he claimed had been shot in a swamp near his house. Not known to breed.
7. *Ardea herodias*. Great Blue Heron.—Casual. Seldom seen. Not known to breed.
8. *Ardea cærulea*. Little Blue Heron.—Casual. I have seen several of these birds which had been taken near East Lake, all in white phase. Not known to breed.
9. *Ardea virescens*. Green Heron.—Not common. Summer resident; breeds. Nests generally in low pine trees, in thickets.
10. *Rallus elegans*. King Rail.—Accidental. On April 12th, 1893, I shot one of these birds in an old field a short distance from my home, which is the only specimen I have found in this locality.
11. *Rallus virginianus*. Virginia Rail.—Accidental. One of these birds was shot near East Lake, in February, 1899, by Mr. Simmons, of Kirkwood, and given to me.
12. *Porzana carolina*. Sora.—Casual. Seldom seen.

13. *Fulica americana*. American Coot.—Accidental. Mr. Fred Williams, of Kirkwood, on November 8th, 1900, shot one of these birds, a male, in a swamp near East Lake, and gave me the specimen. This is the only one that I have found in this locality.

14. *Philohela minor*. American Woodcock.—Not common. Winter resident.

15. *Actitis macularia*. Spotted Sandpiper.—Winter resident; only occasional.

16. *Ægialitis vocifera*. Killdeer.—Winter resident; lingering till late in the spring. Not common. Not known to breed.

17. *Colinus virginianus*. Bob-white.—Resident; breeds. Not common.

18. *Zenaidura macroura*. Mourning Dove.—Resident; fairly common; breeds. Appearing in flocks in winter.

19. *Cathartes aura*. Turkey Vulture.—Resident; fairly common; breeds.

20. *Circus hudsonius*. Marsh Hawk.—Casual. Seldom seen. Not known to breed.

21. *Accipiter cooperi*. Cooper's Hawk.—Not common, but more plentiful in the winter months. Not known to breed.

22. *Falco sparverius*. American Sparrow Hawk.—Not common; more plentiful in winter. Not known to breed.

23. *Megascops asio*. Screech Owl.—Fairly common; resident; breeds.

24. *Bubo virginianus*. Great Horned Owl.—Rare; seldom seen. Resident; breeds.

Hawks and owls are seldom seen or heard in DeKalb county. I have not heard of any serious depredation committed in my immediate neighborhood by these birds. I do not think their numbers are large enough to work injury to farmers or poultry raisers.

25. *Coccyzus americanus*. Yellow-billed Cuckoo.—Summer resident; fairly common; breeds. One of the last birds to arrive in the spring, and one of the first to leave in the fall.

26. *Ceryle alcyon*. Belted Kingfisher.—Summer resident; not common; breeds.

27. *Dryobates villosus*. Hairy Woodpecker.—Rare; seldom seen; not known to breed. Two specimens in my collection, one male and one female, taken in the winter of 1895, are the first and only birds of this species that I have seen in this locality until the present year.

28. *Dryobates pubescens*. Downy Woodpecker.—Fairly common; resident; breeds.

29. *Sphyrapicus varius*. Yellow-bellied Sapsucker.—Not common; winter resident.

30. *Melanerpes erythrocephalus*. Red-headed Woodpecker.—Fairly common; summer resident; breeds. [It is worthy of note that Loomis found this bird scarce in winter, though common

enough in the breeding season, in the Piedmont region of South Carolina.]

31. *Melanerpes carolinus*. Red-bellied Woodpecker.—Not common; winter resident.

32. *Colaptes auratus luteus*. Northern Flicker.—Resident; common; becoming plentiful in winter.

33. *Antrostomus carolinensis*. Chuck-will's-widow.—Spring migrant; rare; seldom heard or seen. Not known to breed. Four specimens taken in DeKalb county by several of my friends have come into my possession.

34. *Antrostomus vociferus*. Whip-poor-will.—Spring migrant; rare. Not known to breed. On April 19, 1900, I flushed one of these birds on the ground; it flew to the lower limbs of a large post oak tree, from which place it was shot. It proved to be a female, whose ovaries were much enlarged.

On April 26th, at 6:50 p. m., I heard the notes of another bird seemingly in the direction where the first one was taken, the notes lasting about ten minutes. These are the only instances I have on record of this bird appearing in DeKalb county.

35. *Chordeiles virginianus*. Nighthawk.—Summer resident; breeds. Fairly common; often gathering in numbers in the fall, when they are killed in large numbers by sportsmen.

36. *Chætura pelagica*. Chimney Swift.—Summer resident; common; breeds.

37. *Trochilus colubris*. Ruby-throated Hummingbird.—Summer resident; not common; breeds.

38. *Tyrannus tyrannus*. Kingbird.—Summer resident; not common; breeds.

39. *Myiarchus crinitus*. Crested Flycatcher.—Summer resident; fairly common; breeds.

40. *Sayornis phœbe*. Phœbe.—Winter migrant; rare; seldom seen.

41. *Contopus virens*. Wood Pewee.—Summer resident; fairly common; breeds.

42. *Cyanocitta cristata*. Blue Jay.—Resident; common; breeds. More plentiful in winter.

43. *Corvus americanus*. American Crow.—Resident; not common; breeds.

44. *Dolichonyx oryzivorus*. Bobolink.—Casual in spring and fall migration.

45. *Molothrus ater*. Cowbird.—Migratory in winter; appearing in flocks. Not known to breed.

46. *Agelaius phœniceus*. Red-winged Blackbird.—Migratory in winter; appearing in flocks, generally in company with Purple Grackle. Casual as a summer resident; a few returning in the spring to breed.

47. *Sturnella magna*. Meadowlark.—Winter resident; appearing

in loose flocks; frequenting old fields and waste places. Not known to breed.

48. *Icterus spurius*. Orchard Oriole.—Summer resident; fairly common; breeds.

49. *Icterus galbula*. Baltimore Oriole.—Rare, in the spring; some seasons not being seen. Not known to breed. It is a peculiar fact that this bird does not breed in this locality. Before the Civil War, when I was a boy living in Atlanta, it was not uncommon to find their nests hanging to the long pendant branches of the tulip tree.

50. *Scolecophagus carolinus*. Rusty Blackbird.—Migratory in winter; some seasons not seen.

51. *Quiscalus quiscula*. Purple Grackle.—Migratory in winter; appearing in large flocks. A few stragglers often seen late in the spring. Some seasons none are seen. Not known to breed.

52. *Carpodacus purpureus*. Purple Finch.—On February 15th, 1897, I found a small flock of these birds on the grounds immediately in the rear of my garden, feeding upon the dried tips (seeds) of tulip tree. Two males and two females were secured from the flock, which contained about twenty birds. They were missed on the 23rd. This is the only record which I have made of these birds in this locality.

53. *Astragalinus tristis*. American Goldfinch.—Resident; appearing in flocks in winter; fairly common; breeds.

54. *Poœcetes gramineus*. Vesper Sparrow.—Winter resident; fairly common. Not known to breed. These birds are irregular visitants. Some seasons they do not appear in the winter months, but are seen in the early spring, covering the fields in loose flocks. At such times on sunshiny days they join together in high concert, and their soft plaintive notes are heard wherever they happen to be. In their spring migration they remain but a short time, arriving about the 15th of March, and departing before the 1st of April.

55. *Ammodramus sandwichensis savanna*. Savanna Sparrow.—Winter resident; rare. One taken December 27th, 1900, the only specimen I ever found in this locality.

56. *Zonotricha albicollis*. White-throated Sparrow.—Winter resident; plentiful; seen everywhere. Arriving the latter part of October, and lingering till late in the spring.

57. *Spizella socialis*. Chipping Sparrow.—Resident; plentiful; found in flocks in winter; breeds.

58. *Spizella pusilla*. Field Sparrow.—Resident; common, but not so plentiful as *socialis*. Found in flocks in winter; breeds.

59. *Junco hyemalis*. Slate-colored Junco.—Winter resident; appearing in loose flocks; common.

60. *Peuccæa æstivalis bachmanii*. Bachman's Sparrow.—Summer resident; rare; seldom heard or seen; breeds.

61. *Melospiza melodia*. Song Sparrow.—Winter resident; common; appearing in loose flocks.

62. *Melospiza lincolni*. Lincoln's Sparrow.—Winter resident; rare. One taken January 24th, 1900; only one ever seen in this locality.

63. *Melospiza georgiana*. Swamp Sparrow.—Winter resident; seldom seen.

64. *Passerella iliaca*. Fox Sparrow.—Winter resident; rare.

65. *Pipilo erythrophthalmus*. Towhee.—Winter resident; fairly common. Not known to breed.

66. *Cardinalis cardinalis*. Cardinal.—Resident; fairly common; breeds.

67. *Zamelodia ludoviciana*. Rose-breasted Grosbeak.—Spring and fall migrant. Fairly common when found, but some seasons none are observed.

68. *Guiraca caerulea*. Blue Grosbeak.—Summer resident; rare; breeds.

69. *Cyanospiza cyanea*. Indigo Bunting.—Summer resident; fairly common; breeds.

70. *Piranga erythromelas*. Scarlet Tanager.—Spring and fall migrant; not common. More seen in the fall when it appears in winter plumage.

71. *Piranga rubra*. Summer Tanager.—Summer resident; common; breeds.

72. *Progne subis*. Purple Martin.—Summer resident; breeds. This bird, before the Civil War, was plentiful around Atlanta, the negroes never failing to put up poles, on which gourds were fastened for their nests. They have now, for the want of these accommodations, become rare, some seasons none are observed.

73. *Stelgidopteryx serripennis*. Rough-winged Swallow.—Summer resident; fairly common; breeds.

74. *Ampelis cedrorum*. Cedar Waxwing.—An irregular visitant in the spring, or fall, but always appearing in loose flocks. Some seasons none are seen.

75. *Lanius ludovicianus*. Loggerhead Shrike.—Summer resident, but lingering far into the winter. Not common. Some seasons none are observed.

76. *Vireo olivaceus*. Red-eyed vireo.—Summer resident; common; breeds.

77. *Vireo flavifrons*. Yellow-throated Vireo.—Spring and fall migrant; not common; not known to breed.

78. *Vireo noveboracensis*. White-eyed Vireo.—Summer resident; common; breeds.

80. *Helinaia swainsonii*. Swainson's Warbler.—I shot one of these birds on May 4th, 1898, in a dense swamp on Charles Davis' land about one-fourth mile from my home in Kirkwood. This is the only bird of this species that I have found in this locality.

81. *Helmitherus vermivorus*. Worm-eating Warbler.—Rare. A male shot by Rev. W. S. LaPrade on April 17, 1902, and a few days later another one was shot at the same place, the only ones recorded.
82. *Compsothlypis americana*. Parula Warbler.—Spring and fall migrant; fairly common; not known to breed.
83. *Dendroica tigrina*. Cape May Warbler.—Spring and fall migrant; not common.
84. *Dendroica aestiva*. Yellow Warbler.—Spring migrant; rare; not known to breed.
85. *Dendroica caerulescens*.—Black-throated Blue Warbler.—Spring migrant; rare; seldom seen. Generally found in dense swamps, and for that reason may be overlooked.
86. *Dendroica coronata*. Myrtle Warbler.—Spring and fall migrant; plentiful.
87. *Dendroica maculosa*. Magnolia Warbler.—Spring and fall migrant; fairly common; like *D. coronata*; generally seen in winter plumage.
88. *Dendroica pensylvanica*. Chestnut-sided Warbler.—Spring and fall migrant; fairly common.
89. *Dendroica striata*. Black-poll Warbler.—Spring and fall migrant; plentiful; our commonest warbler.
90. *Dendroica blackburniæ*. Blackburnian Warbler.—Spring and fall migrant; not common.
91. *Dendroica dominica*. Yellow-throated Warbler.—Summer resident; fairly common. Although I have never found the nest of this bird, I have seen the birds during all the summer. I have always found them in pine trees, and in the highest branches.
92. *Dendroica virens*. Black-throated Green Warbler.—Spring and fall migrant; not common.
93. *Dendroica vigorsii*. Pine Warbler.—Winter resident; lingering till late in the spring; common; not known to breed.
94. *Dendroica palmarum*. Palm Warbler.—Spring and fall migrant; not common.
95. *Dendroica discolor*. Prairie Warbler.—Spring and fall migrant; rare; seldom seen. Generally found in the early fall; breeds.
96. *Seiurus aurocapillus*. Oven-bird.—Spring and fall migrant; rare; seldom seen.
97. *Seiurus noveboracensis*. Water-Thrush.—I shot four of these birds in plum trees in my orchard August 30th, 1898; all males. These are the only specimens I have ever taken in Dekalb county.
98. *Seiurus motacilla*. Louisiana Water-Thrush.—Summer resident; rare; breeds.
100. *Geothlypis trichas*. Maryland Yellow-throat.—Summer resident; fairly common; breeds.
101. *Icteria virens*. Yellow-breasted Chat.—Summer resident; fairly common; breeds.

102. *Wilsonia mitrata*. Hooded Warbler.—Summer resident; fairly common; breeds.

103. *Setophaga ruticilla*. American Redstart.—Spring and fall migrant; common.

104. *Anthus pensilvanicus*. American Pipit.—Winter resident; appearing in flocks; fairly common.

105. *Mimus polyglottos*. Mockingbird.—Resident, and would be common if their nests were not destroyed, but they build in such exposed places that they seldom rear a brood. The Georgia legislature passed a bill at their last session (November, 1900), protecting these birds, but there is not much probability of its being enforced.

101. *Galeoscoptes carolinensis*. Catbird.—Summer resident; common; breeds.

107. *Toxostoma rufum*. Brown Thrasher.—Resident; common; but like the Mockingbird not often seen in winter; breeds.

108. *Thryothorus ludovicianus*. Carolina Wren.—Resident; fairly common; breeds.

109. *Thryomanes bewickii*. Berwick's Wren.—Fairly common winter resident; lingering until late in the spring.

110. *Certha familiaris fusca*. Brown Creeper.—Winter resident; not common.

111. *Sitta carolinensis*. White-breasted Nuthatch. Summer resident, but lingering far into the winter. Fairly common; breeds.

112. *Parus bicolor*. Tufted Titmouse.—Resident; common; heard or seen in all seasons; breeds.

113. *Parus carolinensis*. Carolina Chickadee.—Resident; common, always in company with *P. bicolor*. Rev. LaPrade found a nest in a stump, natural excavation about three feet from ground, on May 3, 1902, from which he took five eggs.

114. *Regulus satrapa*. Golden-crowned Kinglet.—Winter resident; common; generally found in low pine thickets.

115. *Poliophtila cærulea*.—Blue-gray Gnatcatcher. Summer resident; fairly common; breeds.

117. *Hylocichla swainsonii*. Olive-backed Thrush.—Fall migrant; arriving about the 15th of September, departing about the 20th of October. Abundant; found everywhere.

118. *Hylochichla guttata pallasii*. Hermit Thrush.—Fall migrant; fairly common. Arriving early in September, but remaining but a few days, they are generally gone by the time the Olive-backs arrive.

119. *Merula migratoria*. American Robin.—These birds are irregular visitants, sometimes a few are seen in September, remaining but a short time, often seen again in November, the greater part of them appearing in January. When they depart they straggle away a few at a time, a few being seen as late as the 15th of April. Some seasons only a few are observed, but they often arrive in

large numbers, where they may be found on the ground upon any old barren spot. They are particularly fond of old burned off fields; here hundreds are killed by gunners, mostly boys. Not known to breed.

120. *Sialia sialis*. Bluebird.—Resident. This once plentiful bird, is now becoming rare. Not until the present season have they been known to breed in this locality since the spring of 1894.

121. *Passer domesticus*. European House Sparrow.—We are not much annoyed by the English Sparrows in Kirkwood. There are but few places here where they have built nests, or in any way become a nuisance. In the fall they may be often seen in large numbers, frequenting fields where German millet and other small grain has been harvested.

Ordinarily as many as two hundred could be counted in a day's travel, but their presence is not perceptibly felt outside of the city limits of Atlanta, which joins the Dekalb county line about two miles directly west from Kirkwood.

There is an old house a short distance from my home, a kind of neglected tumbled down affair, which looks as if it had been purposely constructed for the use of the English Sparrow. This old place is full of nooks and corners, gables and valleys, and blind windows with the slats broken out, and here the little rascals have snugly ensconced themselves, while all efforts on the part of the owner to dislodge them have been vain.

The following species have been added since the list was put into type.—(ED.)

Coccyzus erythrophthalmus. Black-billed Cuckoo.—On April 29, 1902, Rev. W. H. LaPrade shot a female and brought it to me.

Empidonax virescens. Green-crested Flycatcher.—Fairly common in spring; may breed.

Quiscalus quiscula aglæus. Florida Grackle.—Migratory in winter; appearing in small flocks.

Helminthophila rubricapilla. Nashville Warbler.—Fairly common in fall migrations and in immature plumage.

Olbiorchilus hiemalis. Winter Wren.—Winter resident; rare.

(Mr. Frank L. Burns has revised and emended this list by the invitation of the author.—ED.)